

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
16 June 2005 (16.06.2005)

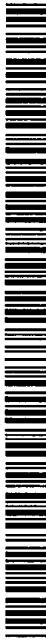
PCT

(10) International Publication Number
WO 2005/055496 A2

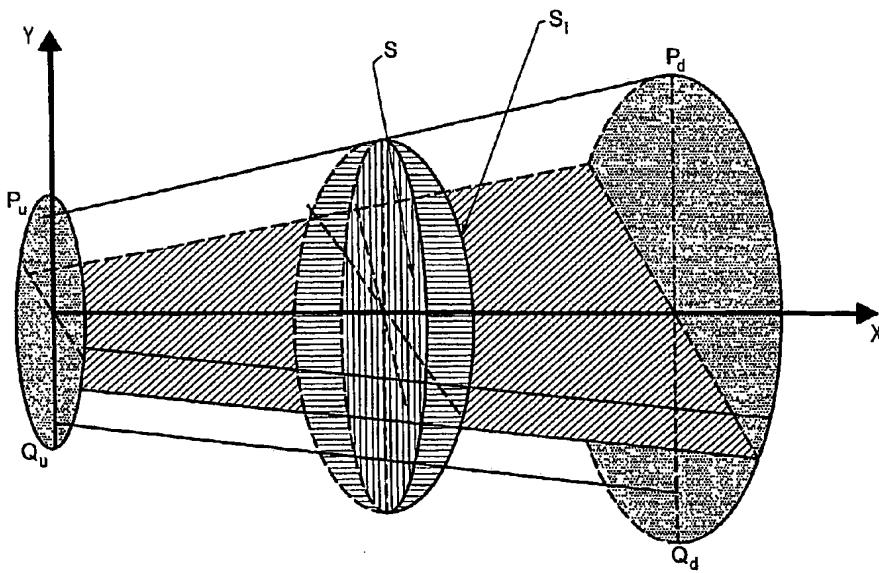
- (51) International Patent Classification⁷: **H04L**
- (21) International Application Number: PCT/US2004/039895
- (22) International Filing Date: 24 November 2004 (24.11.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/525,603 26 November 2003 (26.11.2003) US
- (71) Applicant (for all designated States except US): **VIA-TRONIX INCORPORATED [US/US]**; 25 East Loop Road, Stony Brook, NY 11790 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **CAI, Wenli [CN/US]**; 46 Sawyer Avenue Apt. 1, Dorchester, MA 02125 (US). **DACHILLE, Frank, C. [US/US]**; 94 Central Avenue, Amityville, NY 11701 (US).
- (74) Agents: **DEROSA, Frank, V. et al.; Chau & Associates, LLC, 130 Woodbury Road, Woodbury, NY 11797 (US).**
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR OPTIMIZATION OF VESSEL CENTERLINES



WO 2005/055496 A2



(57) Abstract: Methods are provided for optimizing a vessel centerline in a digital image. For instance, a method includes providing a digital image of a vessel wherein said image comprises a plurality of intensities corresponding to a domain of points in a D-dimensional space, initializing a centerline comprising a plurality of points in the vessel (step 20), determining a cross section of the vessel at each point in the centerline (step 21), evaluating a center point for each cross section of the vessel (step 22), and determining a refined centerline from the center points of each cross section (step 23).